Permit Fact Sheet

General Information

Permit Number:	WI-0050521-10-0
Permittee Name:	Baker Cheese Factory Inc
Address:	N5279 County Road G
City/State/Zip:	St. Cloud WI 53079
Discharge Location:	Discharge is to an un-named tributary, 1/3-mile North of the intersection of County Roads G and T in Fond du Lac County
Receiving Water:	A wetland tributary (Baker Creek) to the Mullet River
StreamFlow ($Q_{7,10}$):	0 cfs
Stream Classification:	Warm water sport fish, non-public water supply

Facility Description

This facility produces mozzarella cheese. This activity results in the discharge of 11,000 gallons per day of noncontact cooling water and boiler blowdown to an absorption pond via outfall 002. The on-site treatment plant discharges treated process wastewater to a wetland tributary via surface water outfall 003. Whey processing wastewater shall also contribute additional wastewater that must be treated prior to discharge to the wetland tributary. Discharge flows are approximately 0.22 million gallons per day. Currently whey processing wastewater is hauled off-site for further processing. Land application outfalls 001 and 004 are retained from the current permit to allow land application of industrial process wastewater and wastewater biosolids resulting from the wastewater treatment process. Wastewater is treated in an activated sludge process with enhanced biological phosphorus removal, consisting of an influent wetwell/lift station, selector tank, aeration basin, and membrane system for liquid/solids separation. High strength chloride wastewater is captured and diverted to a tank, and ultimately hauled to another wastewater treatment facility.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
001	N/A – no flow monitoring	Representative samples of process washwater from the hauling truck prior to land application
002	0.01 MGD (5/1/19-4/30/20)	Representative samples of noncontact cooling water and boiler blowdown prior to discharge to the absorption pond
003	0.22 MGD (5/1/19-4/30/20)	Representative samples shall be obtained at the point of discharge from the wastewater treatment plant. Samples for temperature, however, shall be obtained just prior to discharge to the stream.
004	N/A – no flow monitoring	Representative samples of the wastewater treatment plant biosolids shall be obtained prior to land application
601	N/A – temperature monitoring only	Representative receiving water temperature samples shall be obtained just prior to the wetland complex.

1 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 003- TREATED PROCESS WASTEWATER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	16 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies November-April, each year.
BOD5, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies November-April, each year.
BOD5, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies November-April, each year.
BOD5, Total	Daily Max	8.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May-October, each year.
BOD5, Total	Weekly Avg	5.4 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May-October, each year.
BOD5, Total	Monthly Avg	5.4 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May-October, each year.
Suspended Solids, Total	Daily Max	16 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	3/Week	Continuous	
pH Field	Daily Min	6.0 su	3/Week	Continuous	
Dissolved Oxygen	Daily Min	7.0 mg/L	3/Week	Grab	
Temperature	Daily Max	76 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the months of December, January & February.
Temperature	Daily Max	77 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the months of March & November.
Temperature	Daily Max	79 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of April.
Temperature	Daily Max	82 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the months of May & September.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Temperature	Daily Max	84 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the months of June & August.
Temperature	Daily Max	85 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of July.
Temperature	Daily Max	80 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of October.
Temperature	Weekly Avg	49 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the months of November, December & January.
Temperature	Weekly Avg	50 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of February.
Temperature	Weekly Avg	52 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of March.
Temperature	Weekly Avg	55 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of April.
Temperature	Weekly Avg	65 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of May.
Temperature	Weekly Avg	76 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of June.
Temperature	Weekly Avg	81 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the months of July & August.
Temperature	Weekly Avg	73 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of September.
Temperature	Weekly Avg	61 deg F	3/Week	Continuous	Limit effective October 1, 2024 for the month of October.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	6.8 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies April & May, each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	2.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies April & May, each year.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.4 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June-September, each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.9 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies June-September, each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	5.5 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies October & November, each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	2.6 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies October & November, each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	11 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies December-March, each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.5 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies December-March, each year.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	24-Hr Flow Prop Comp	See variable ammonia limit table in permit.
Chloride	Daily Max	492 mg/L	3/Week	24-Hr Flow Prop Comp	
Chloride	Weekly Avg	395 mg/L	3/Week	24-Hr Flow Prop Comp	
Chloride	Monthly Avg	395 mg/L	3/Week	24-Hr Flow Prop Comp	
Chloride	Weekly Avg	824 lbs/day	3/Week	Calculated	
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	Effective upon reissuance; this limit will be retained as it represents a minimum control level.
Phosphorus, Total		lbs/day	3/Week	Calculated	
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	
WQT Computed Compliance (TP)	6-Month Avg	0.075 mg/L	Monthly	Calculated	Limit is effective October 1, 2020.
WQT Computed Compliance (TP)	Monthly Avg	0.225 mg/L	Monthly	Calculated	Limit is effective October 1, 2020.
WQT Computed Compliance (TP)	6-Month Avg	0.16 lbs/day	Monthly	Calculated	Limit is effective October 1, 2020.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	
Chronic WET		TU_c	See Listed Qtr(s)	24-Hr Flow Prop Comp	

Changes from Previous Permit:

- Updated daily max, weekly avg and monthly avg BOD_5 effluent limits
- Updated daily max, weekly avg and monthly avg ammonia nitrogen effluent limits
- Updated daily min dissolved oxygen effluent limit
- Updated daily max (reduced limit) and weekly avg chloride effluent limits
- Addition of monthly avg effluent limit and weekly avg mass effluent limit for chloride
- Updated daily max and weekly avg temperature effluent limits
- Removed daily max and monthly avg mass effluent limits for total suspended solids
- Addition of Acute and Chronic whole effluent toxicity testing
- Addition of effluent limits to comply with limit expression requirements in ss. NR 106.07 and 205.065(7)

Explanation of Limits and Monitoring Requirements

Water Quality Based Limits and WET Requirements

Refer to the WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau dated October 28, 2019, used for this reissuance.

Phosphorus – Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. Currently in NR 217 Wis. Adm. Code there are two methods used to determine if a phosphorus limit is needed: a technology based effluent limit (TBEL) and a water quality based effluent limit (WQBEL). Based on the size and classification of the stream, the water quality criteria for Baker Creek is 75 ug/L. In this case, *the WQBEL is 0.225 mg/L (monthly average), 0.075 mg/L & 0.16 lbs/day (6-month average).* For the reasons explained in the April 30, 2012 paper entitled 'Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin', WDNR has determined that it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily, weekly or monthly value. The final effluent limit for phosphorus is expressed as a six-month average. It is also expressed as a monthly average equal to three times the derived WQBEL (which equates to 0.225 mg/L). This final effluent limit was derived from and complies with the applicable water quality criterion. A phosphorus concentration limit is necessary to prevent backsliding during the term of the permit. The TBEL limit of 1.0 mg/L will be retained in the permit.

The wastewater treatment facility is not able to meet the WQBEL. This permit authorizes the use of trading as a tool to demonstrate compliance with the phosphorus WQBELs. This permit includes terms and conditions related to the Water Quality Trading Plan (WQT-2020-0010) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. Baker Cheese will utilize Water Quality Trading as a phosphorus compliance

option through the continuance of permanent vegetative cover on three (3) Baker owned fields (totaling 20 acres) which was installed in 2015. The WQT Plan proposes the generation of a range of 65 lbs/yr to 87 lbs/yr of phosphorus credits for the next five years.

Additional WQT subsections in the permit provide information on compliance determinations, annual reporting and re-opening of the permit.

Thermal – Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects.

TMDL Under Development – There is an effort underway to improve water quality in the Northeast Lakeshore Basin. The framework for this effort is a Total Maximum Daily Load (TMDL) which is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The Northeast Lakeshore Basin TMDL will set phosphorus and total suspended solids (TSS) waste load allocations (WLAs) for dischargers throughout the project area. WLA-derived limits must be included in WPDES permits once the TMDL has been approved by US EPA.

Industrial Effluent Limits – In accordance with the federal regulation 40 CFR 122.45(d), limits in this permit are to be expressed as daily maximum and monthly average limits whenever practicable. Minor changes have been made to BOD_5, total suspended solids, chloride and ammonia limits.

Whole Effluent Toxicity – Whole effluent toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html .

Ammonia – Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia.

Chloride – Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. If the permittee's effluent data shows that a calculated WQBEL for chloride cannot be met, then the permit will include a chloride effluent limitation.

Categorical Limits

Phosphorus – Wis. Adm. Code, ch. NR 217, requires industrial facilities that discharge greater than 60lbs of total phosphorus per month to comply with a 12-month rolling average limit of 1.0 mg/L, or an approved alternative concentration limit. Therefore, the existing technology-based limit of 1.0 mg/L as a monthly average remains applicable unless a more stringent water quality-based concentration limit is given.

Sample Point Number: 601- IN-STREAM

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Temperature Maximum		deg F	Daily	Continuous	

Changes from Previous Permit:

The Sample Type has been changed to “Continuous” to reflect the current operations.

Explanation of Limits and Monitoring Requirements

This sample point is utilized to monitor the temperature of the receiving water just prior to discharge to the wetland complex.

2 Land Treatment – Proposed Monitoring and Limitations

Sample Point Number: 002- NCCW & BBD TO ABSORP POND

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Monthly	Estimated	
BOD5, Total		mg/L	Quarterly	Grab	
Suspended Solids, Total		mg/L	Quarterly	Grab	
pH Field	Daily Max	9.0 su	Quarterly	Grab	
pH Field	Daily Min	6.0 su	Quarterly	Grab	
Chloride	Daily Max	250 mg/L	Quarterly	Grab	

Changes from Previous Permit:

No changes.

Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code.

3 Land Application - Sludge/By-Product Solids (industrial only)

Sample Point Number: 001- PROCESS WASHWATER TO LAND APP

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/L	Monthly	Composite	
Chloride		mg/L	Monthly	Composite	
Phosphorus, Total		mg/L	Quarterly	Composite	

Changes from Previous Permit:

- Remove total solids monitoring

Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial liquid wastes are determined in accordance with ch. NR 214, Wis. Adm. Code. Total solids monitoring has been removed, as previous monitoring has shown very low or negligible percent solids present in the process washwater.

Sample Point Number: 004- WASTEWATER TRTMNT BIOSOLIDS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Monthly	Grab	
Chloride		Percent	Monthly	Grab	
Nitrogen, Total Kjeldahl		Percent	Monthly	Grab	
Nitrogen, Ammonium (NH4-N) Total		Percent	Monthly	Grab	
Nitrogen, Organic Total		Percent	Monthly	Grab	
Phosphorus, Total		Percent	Monthly	Grab	
Potassium, Total Recoverable		Percent	Annual	Grab	
pH Field		su	Annual	Grab	
Lead Dry Wt		mg/kg	Annual	Grab	
Zinc Dry Wt		mg/kg	Annual	Grab	
Copper Dry Wt		mg/kg	Annual	Grab	
Cadmium Dry Wt		mg/kg	Annual	Grab	
Nickel Dry Wt		mg/kg	Annual	Grab	

Changes from Previous Permit:

No changes.

Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214, Wis. Adm. Code.

4 Compliance Schedules

4.1 Temperature Limits Compliance

This compliance schedule requires the permittee to achieve compliance by the specified date.

Required Action	Due Date
Preliminary Compliance Report: Submit a preliminary compliance report indicating alternatives to achieve the final temperature limits. Informational Note: Refer to NR 106 Subchapters V & VI or NR 102.26, Wis. Adm. Code, for information regarding the re-evaluation of limits.	09/30/2021
Action Plan: Submit an action plan for complying with all applicable effluent temperature limits.	09/30/2022
Construction Plans: Submit construction plans (if construction is required for complying with effluent temperature limits) and include plans and specifications with the submittal.	03/31/2023
Initiate Actions: Initiate actions identified in the plan.	09/30/2023
Complete Actions: Complete actions necessary to achieve compliance with effluent temperature limits.	09/30/2024

4.2 Annual Water Quality Trading (WQT) Report

As specified in the Surface Water section of this permit, the permittee shall submit annual Water Quality Trading Reports in accordance with the following schedule.

Required Action	Due Date
Annual WQT Report: Submit an annual WQT report that shall cover the first year of the permit term. The WQT Report shall include: The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance; The source of each month's pollutant reduction credits by identifying the approved water quality trading plan that details the source; A summary of the annual inspection of each nonpoint source management practice that generated any of the pollutant reduction credits used during the previous year; and Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to water quality trading that have not been reported in discharge monitoring reports.	01/31/2021
Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.	01/31/2022
Annual WQT Report #3: Submit an annual WQT report that shall cover the previous year.	01/31/2023
Annual WQT Report #4: Submit an annual WQT report that shall cover the previous year.	01/31/2024
Annual WQT Report #5: Submit an annual WQT report that shall cover the previous year. If the permittee wishes to continue to comply with phosphorus limits through WQT in subsequent permit terms, the permittee shall submit a revised WQT plan including a demonstration of credit need, compliance record of the existing WQT, and any additional practices needed to maintain compliance over time.	01/31/2025
Annual WQT Report Required After Permit Expiration: In the event that this permit is not reissued by the expiration date, the permittee shall continue to submit annual WQT reports by January 31 each year covering the total number of pollutant credits used, the source of the pollution reduction credits, a summary of annual inspection reports performed, and identification on noncompliance or failure to implement any terms or conditions of the approved water quality trading plan for the previous calendar year.	

Explanation of Compliance Schedules

Temperature Limits Compliance – The proposed permit contains more stringent effluent thermal limits. A compliance schedule has been included to allow the facility time to investigate sample point location and other mechanisms to come into compliance with these limits.

Annual Water Quality Trading (WQT) Reports - Reports are required, starting in 2021, that include the following information:

- Verification that site inspections occurred;
- Brief summary of site inspection findings;
- Identification of noncompliance or failure to implement any terms or conditions of the permit or trading plan that have not been reported in discharge monitoring reports;
- Any applicable notices of termination or management practice registration; and
- A summary of credits used each month over the calendar year

Attachments:

Substantial Compliance Determination, by Mark Stanek, Wastewater Engineer, dated November 21, 2019

Water Quality Based Effluent Limits Memo, by Shaun Shields, Water Resources Engineer, dated October 28, 2019

Baker Cheese, Inc. Water Quality Trading Plan WQT-2020-0010, dated May 29, 2020

Conditional Approval Letter for WQT-2020-0010, dated June 3, 2020

Proposed Expiration Date:

September 30, 2025

Justification Of Any Waivers From Permit Application Requirements

No waivers from permit application requirements were granted.

Prepared By:

Sarah Donoughe

Wastewater Specialist

Date: August 17, 2020